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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY-DOCKET NO.	CONFIRMATION NO.
10/061,504	02/01/2002	Robert M.R. Neff	10010205-1	2083

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EXAMINER

NGUYEN, LINH M.

ART UNIT

PAPER NUMBER

2816

DATE MAILED: 04/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/061,504

Applicant(s)

NEFF, ROBERT M.R.

Examiner

Linh M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-13 and 15-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-3,5-13,15-18,21,22 and 25-28 is/are allowed.
- 6) ☒ Claim(s) 19 and 20 is/are rejected.
- 7) ☒ Claim(s) 23-24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 24 January 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

This is a reply to the Applicant's amendment submitted on 01/24/2002. In this amendment, claims 4 and 14 are cancelled, claim 21-28 are newly added; and thus, claims 1-3, 5-13, and 15-28 are currently presented in the instant application.

Drawings

1. The proposed drawing corrections have been approved.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dally et al. (U.S. Patent No. 6,275,072), in view of Muscavage (U.S. Patent No. 5,268,656).

With respect to claim 19, Dally et al. discloses, in Fig. 2, a clock generator comprising a multi-stage serial-delay circuit [121-125, 126, 127, 128, 130, 129] connected for (i) receiving an input clock signal [ack], and ii) generating in response thereto M (*M=number of intermediate of clock signals=4 in this case*) intermediate clock signals [bclk, cclk, dclk, eclk].

Dally et al.'s teachings lack to disclose that each of M intermediate clock outputs is connected to a ring counter that generates N/M of the N interleaved clock signals, where (i) N is a non-prime integer and (ii) M is a factor of N.

Muscavage discloses, in Fig. 2, a clock generator comprising M (*M=4 in this case*) clock generator means including a ring counter circuit [30, 32, 34, or 36], for (i) receiving a respective

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one of the intermediate clock signals from the clock generator means of the multi-stage serial-delay circuit, and ii) generating in response thereto N/M ($N/M = 32/4$ in this case) of N ($N=32$ in this case) interleaved clock signals ($N=32$ is the number of outputs from 4 ring counters [30, 32, 34, and 36]; each counter generates 8 output clock signals; for example, ring counter [30] generates 8 outputs from 8 flip-flops [0, 4, 8, 12, 16, 20, 24, and 28]); wherein the ring counter circuit includes an N/M -stage ring counter ($N/M = 32/4 = 8$, which is the number of ring counters/flip-flops; for example, ring counter [30] is configured with 8 flip-flops [0, 4, 8, 12, 16, 20, 24, and 28]).

To implement the clock generator system of Dally et al. by additionally arranging a number of clock generators including a corresponding number of ring counter circuits configured with N/M ring counters therein for a generation of multiple phases of a desired clock signal would have been obvious to one of ordinary skill in the art at the time of the invention since such an arrangement of clock generators with ring counter circuits for the stated purpose has been a well-known practice in the art as evidenced by the teachings of Muscavage (see Muscavage; col. 2, lines 1-2).

Allowable Subject Matter

4. Claims 1-3, 5-13, 15-18, 21-22, and 25-28 are allowed.
5. Claims 23-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
6. The following is a statement of reasons for the indication of allowable subject matter:

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Prior art of record does not show or fairly suggest (1) a specific frequency of the interleaved clock signals and that of the input clock signal; wherein (a) for the interleaved clock signals, the frequency is $1/(N \times T_d)$, and (b) for the input clock signal, (b₁) the frequency is $1/(M \times T_d)$ when the interleaved clock generator means of the first type includes the multi-stage serial delay means, and (b₂) the frequency is $M/(N \times T_d)$ when the interleaved clock generator means of the first type includes the ring counter circuit, as called for in claims 1, 13 and 23; (2) an interleaved clock signal generator, in which (a) the input clock signal comprises differential clock signals, (b) each of the differential clock signals has 50% duty cycle, (c) the multi-stage serial-delay circuit includes $M/2$ delay stages, and (d) each of the delay stages provides two of the intermediate clock signals, as called for in claims 8 and 24; (3) an interleaved clock generator (a) for generating N interleaved clock signals in response to an input clock signal, where N is *non-prime integer*, and (b) an interleaved clock generator means of a first type for generating in response thereto M interleaved intermediate clock signals, where M is a factor of N and is *an integer greater than unity*, the interleaved clock generator means of the first type including a ring counter circuit, as called for in claims 9, 18 and 25.

Remarks

7. The Applicant's amendment submitted on 01/24/2003 has been seriously considered but are moot in view of the new ground(s) of rejection.

With respect to amended claim 19, the examiner agrees with the Applicant that prior art Betts does not disclosed the claimed subject matter; however, prior art Dally et al. and Muscavage do show all the claimed limitation contained therein; thus, claim 19 remains rejected (see Rejections – 35 USC 103).

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Based upon the amendment, claims 1-3, 5-13 and 15-18 are now allowed and newly added claims 21-22 and 25-28 are also allowed.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Linh M. Nguyen whose telephone number is (703) 305-0414. The examiner can normally be reached on Alternate Mon, Tuesday - Friday from 7:00 to 4:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Callahan can be reached on (703) 308-4876. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-0142 for regular communications and (703) 305-0142 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Linh M. Nguyen

LMN



TIMOTHY P. CALLAHAN
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